

BEHEMOTH: A Tail Like a Cedar?

Dave Miller, Ph.D.

His description of behemoth, God states emphatically that the creature "moves his tail like a cedar" (Job 40:17). Yet many commentators have insisted that behemoth is to be identified as either the elephant, or more likely, the hippopotamus (cf. the NIV footnote at Job 40:15: "Possibly the hippopotamus or the elephant"). Since both of these animals have farcically tiny tails, the comparison of behemoth's tail with a cedar must be explained in some way.

One explanation is to claim that the term "tail" (zah-nahv) refers to a general appendage and so may refer to an elephant's "trunk" (e.g., Harris' note in Harris, et al., 1980, 1:246). Of course, this position logically surrenders the view that behemoth was a hippopotamus. In either case, however, no linguistic evidence supports this speculation, as Hebrew lexicographers uniformly define the word as the "tail" of an animal (Brown, et al., 1906, p. 275; Holladay, 1988, p. 90; Davidson, 1850, p. 240; Gesenius, 1847, p. 248; Hebrew-English..., n.d., p. 75). Further, a simple perusal of the use of the term elsewhere in the Old Testament confirms this definition. Occurring 11 times in the Hebrew text of the Old Testament (Wigram, 1890, p. 389), the word is used one time to refer to the tail of a snake (Exodus 4:4), 3 times in Judges 15:4 to refer to fox tails, 4 times in a figurative sense to refer to persons of lower rank in society in contrast to the "head," i.e., persons of higher rank (Deuteronomy 28:13,44; Isaiah 9:14; 19:15; see Barnes, 1847, 1:197-198,336-337), one time in a figurative

sense to indicate the contemptible, lying prophet in contrast with "the elder and honorable" (Isaiah 9:15), and once in Isaiah 7:4 to refer figuratively to King Rezin of Syria and King Pekah of Israel as the tail ends of smoking firebrands (wooden pokers—Gesenius, p. 18). The final occurrence is the reference to the tail of behemoth in Job. Obviously, like the foxes of Judges 15 and the snake of Exodus 4, the tail of behemoth refers to the animal's literal tail.

Another explanation suggests that only a branch of the cedar is being compared to behemoth's tail. On the face of such a suggestion, it is difficult to believe that God would call Job's attention to the tail of the hippopotamus, as if the tail had an important message to convey to Job. In essence, God would be saying to Job: "The behemoth is such an amazing creature—it has a tail like a twig!" Since the context of Job 40 indicates God's words were intended to impress Job with his inability to control/manage the animal kingdom, such a comparison is meaningless, if not ludicrous.

The Hebrew term rendered "cedar" (ehrez) refers to a tree of the pine family, the cedrus conifera (Gesenius, 1847, p. 78), more specifically and usually, the cedrus libani—the cedar of Lebanon (Harris, et al., 1980, 1:70). The tree and its wood are alluded to frequently in the Old Testament (some 72 times—Wigram, 1890, p. 154). The renowned cedars of Lebanon grew to an average height of 85 feet, with a trunk circumference averaging 40 feet, and branches that extended horizontally as long as the height of the tree itself (Harris, et al., 1:70). Indeed,

the branches themselves were tree-like in size. King Solomon made extensive use of the cedars of Lebanon in his construction projects. The House of the Forest of Lebanon which he built was 45 feet high (comparable to a four-story building today), with its top horizontal beams situated on rows of cedar pillars (1 Kings 7:2-3). No longer the prolific trees they once were, in antiquity they grew in abundance (cf. 1 Chronicles 22:4; Ezra 3:7; Psalm 92:12; 104:16).

"PRODIGIOUS BULK"

Even as Ophir was renowned for the unique quality of its gold (e.g., Isaiah 13:12), the allusions in the Bible to cedars make it clear that the tree was distinguished for its mammoth size, height, and stability. Respected biblical lexicographer John Parkhurst alluded to its "prodigious bulk" (1799, p. 678). In his 1878 book *Bible Lands*, Henry Van-Lennep observed that the cedar was known as "the image of grandeur and glory" (p. 146). In his *Bible Lands Illustrated*, Henry Fish described its majesty:

[T]heir massive branches, clothed with a scaly texture almost like the skin of living animals, and contorted with all the multiform irregularities of age, may well have suggested those ideas of regal, and almost divine strength and solidity which the sacred writers ascribe to them.... How natural that Hebrew poets selected such...colossal trunks as emblems of pride, and majesty, and power (p. 685-686, emp. added).

The cedar stands out from all other trees alluded to in the Bible in terms of its size, including the olive, fig, sycamore, pomegranate, almond, acacia, terebinth, myrtle, tamarisk, and even the oak (Padfield, 2011; "Trees in the Land...," 2011; Baker, 1974).

The cedar is often used metaphorically in the Bible to accentuate these qualities in the object of comparison. For example, consider Isaiah's prediction of the coming Day of the Lord, which would be a day in which everything that is "high and lifted up" would be brought low—beginning with the cedars of Lebanon, but

also including **high** mountains, **high** towers and fortified walls, the large and seaworthy ships of Tarshish, and most certainly, man's pride and haughtiness (2:12-18). Similarly, God pronounced judgment on the mighty Assyrian king Sennacherib because he dared to reproach the Lord and boast: "By the multitude of my chariots I have come up to the **height** of the mountains, to the limits of Lebanon; I will cut down its **tall cedars** and its choice cypress trees; I will enter its farthest **height**" (Isaiah 37:24, emp. added; cf. 2 Kings 19:23).

God declared through the prophet Amos that it was He who enabled the Israelites to occupy the land of Canaan by clearing Palestine of the Amorite "whose height was like the height of the cedars" (Amos 2:9, emp. added). God instructed Ezekiel to speak a parable to his fellow citizens that described how a great eagle 'came to Lebanon and took from the cedar the highest branch" (Ezekiel 17:3), i.e., the highest official (King Jehoichin), but one day God would take from the highest branches of the cedar a great replacement, i.e., the Messiah (vs. 22-24). Consider God's instructions to Ezekiel concerning the speech he was to make to the Egyptian Pharoah:

Son of man, say to Pharaoh king of Egypt and to his multitude: "Whom are you like in your greatness? Indeed Assyria was a cedar in Lebanon, with fine branches that shaded the forest, and **of high** stature; and its top was among the thick boughs. The waters made it grow; underground waters gave it height Therefore its height was exalted above all the trees of the field; Its boughs were multiplied, and its branches became long because of the abundance of water, as it sent them out" (Ezekiel 31:2-5, emp. added).

When King Amaziah tried to goad King Jehoash into armed conflict, Jehoash sent a parable that portrayed Amaziah as a measly thistle in contrast to Jehoash **the cedar** (2 Kings 14:9). Ezekiel compared Tyre to a mighty ship whose mast was made from a cedar from Lebanon (27:5). Zechariah pronounced disaster on those who attack Israel, comparing their downfall to the falling of the

"mighty" ("glorious"—ASV/ESV) cedar of Lebanon (11:2).

In all these references, size and height are inherent in the comparison between the cedar trees and their moral or spiritual counterpart. What's more, though the cedar tree, and especially the cedar of Lebanon, was considered mammoth in its strength and size, the psalmist assures us that the Lord's voice alone can easily break, splinter, and crush the mighty cedar (Psalm 29:5). So for God to bring to Job's attention the tail of behemoth, comparing it to a cedar, most certainly means that God intended to dazzle Job with the sheer magnitude of even the creature's tail (let alone the rest of him!). This creature's brute strength and size were such that Job would not even consider attempting to subdue or control it. God's point? The same as it was for describing leviathan: "Who then is able to stand against Me?" (Job 41:10).

How intimidated would Job have been—what weight would God's argument have carried with Job—if God compared behemoth's tail merely to a twig or branch? How powerful and effective would God's argument have been in Job's mind if God were referring merely to the tail of an elephant, hippopotamus, rhinoceros, or even a wooly mammoth? The argument would have fallen flat. An elephant or hippo's tail would be better likened to a short, pliable whip

or cord that swishes quickly from side to side—not the movement of a cedar which sways slowly due to its enormity. Even the purpose of a hippo's tiny, stumplike tail is hardly noble: "The hippo's flat, paddle-like tail is used to spread excrement, which marks territory borders and indicates status of an individual" ("Hippopotamus," n.d.). No, God had to be referring to a creature, with which Job was fully familiar, that was so gargantuan and possessed such strength that even its tail was beyond human **control**. What other land creature on Earth possesses a tail that merits being compared to a tree? There is no such creature—except a dinosaur.

DINOSAURS WITH TAILS LIKE TREES

¬ake, for example, *Apatosaurus*, whose overall body length could reach 90 feet, which included a long, prodigious tail "held together with 82 bones" (Viegas, 2011). Argentinosaurus stood 70 feet high (about the size of a six story building), weighed 100 tons, and was some 120 feet in length (three long school buses placed end to end), with over a third of that length consisting of its massive tail. Diplodocus was an enormous-tailed giant, measuring some 90 feet long, with a 26 foot long neck and a 45 foot long tail (Col, 1996a). The creature's name derives from the Greek words diploos (double) and *dokos* (beam), a reference to

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its double-beamed chevron bones located in the underside of the tail ("Diplodocus," 2011). Scientists think the 85-foot-long Brachiosaurus used its long, thick tail to brush away most attackers (Col, 1996b). Similarly, *Supersaurus* measured about 138 feet, with perhaps nearly half that length consisting of its tree-like tail also used for protection (Col, 1996c). Seismosaurus measured from 130-170 feet long with a tail that contained at least one unusual wedge-shaped vertebra that gave it a kink, again, enabling it to use its movable tail for protection (Col, 1996d). [NOTE: The word translated "moves" (NKJV/ASV), "bends" (NASB), "sways" (NIV), or "makes stiff" (ESV/ RSV) is from a Hebrew verb (*chah-phetz*) that means "to bend down" (Brown, et al., p. 343; Harris, et al., p. 311), "to bend, to curve" (Gesenius, p. 296), "to bend, incline" (Davidson, 1850, p. 270), "let hang" (Holladay, 1988, p. 112), or "stretch out" (Botterweck, 1986, 5:92).]

THE POINT

Picture a mere human wrapping his arms around a 40-foot circumference cedar tree that is 85 feet long, and then attempting to sway or swing it back and forth like the tail of an animal. The image is laughable! And God's point was just that poignant and penetrating. The comparison was sufficient to evoke the desired effect in Job, who humbly exclaimed: "I know that You can do everything, and that no purpose of Yours can be withheld from You.... Therefore I have uttered what I did not understand, things too wonderful for me, which I did not know.... Therefore I abhor myself, and repent in dust and ashes" (Job 42:2-6).

The imposing intimidation of modern pseudo-science, that dominates the intellectual landscape of the world, has succeeded in pressuring many to

compromise the biblical text in hopes of retaining what they conceive to be academic legitimacy and sophistication. Nevertheless, abundant bona fide evidence exists to demonstrate that dinosaurs were created by God on the same day of Creation as humans (Genesis 1:24-31), that dinosaurs and humans once cohabitated (cf. Lyons and Butt, 2008), and that the incredible creature of Job 40 was, in fact, some kind of dinosaur.

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Resources—Feature Article

Faith, Evidence, and Credible Testimony

Eric Lyons, M.Min.

It might surprise some to learn that Thomas was not the only "doubting disciple" immediately following Jesus' resurrection. Do you recall what happened when Mary Magdalene, the first person to whom Jesus appeared, went to alert the mourning apostles of Jesus' empty tomb and resurrection? When the apostles "heard that He was alive and had been seen by her, they did not believe" (Mark 16:11, emp. added). According to Luke, the words of Mary Magdalene and the women who accompanied her seemed to the apostles "like idle tales" (24:11) or "nonsense" (24:11, NASB). Later, when the two disciples on the road to Emmaus reported to the apostles how Jesus had appeared to them as well, the apostles "did not believe them either" (Mark 16:13). When Jesus finally appeared to the apostles (not including Thomas) on the evening of His resurrection (John 20:19), He questioned their "doubts" (Luke 24:38) and "rebuked their unbelief and hardness of heart, because they did not believe those who had seen Him after He had risen" (Mark 16:14). Then, when Jesus appeared to the apostles eight days later, this time with Thomas present, Jesus instructed him to "not be unbelieving, but believing" (John 20:27).

Those closest to Jesus during His ministry initially doubted His resurrection from the dead and were justifiably rebuked for their unbelief. Although many of us likely would have been guilty of the same doubts, still, the apostles should have believed the witness of Mary Magdalene as soon as she testified to the empty tomb and risen Savior. Believers today, however, must be careful not to misinterpret Jesus' rebukes of unbelief as promoting the popular notion that Christianity is an emotion-based, feel-good religion where evidence is unavailable or unnecessary.

EVIDENCE

Since the Bible repeatedly testifies that the faith of Christians is grounded in truth, reason, knowledge, and evidence (Romans 1:20; Psalm 19:1-4; John 5:31-47; Acts 1:3; 26:25), some wonder why Jesus rebuked the apostles for doubting His resurrection prior to seeing Him alive (Mark 16:14; cf. Luke 24:38). Had Jesus expected His apostles to have faith in His resurrection without proof? And why did Jesus tell Thomas, "Blessed are those who have **not seen** and yet **have believed**" (John 20:29, emp. added)? Was Jesus commending an unverifiable, fickle faith?

The fact is, neither Thomas nor any apostle was rebuked for wanting evidence of Jesus' resurrection. They were rightly rebuked, however, (1) for doubting the credible evidence they had already received, and (2) for demanding more evidence than was necessary for them to have solid faith in the risen Savior.

Prophecies

The same Man Whom Peter confessed was "the Christ, the Son of the living God" (Matthew 16:16); the same Man Whom the apostles had seen raise Lazarus from the dead (John 11:43-44); the same Man Whom they saw transfigured (Matthew 17:5-9); the same Man Who had worked many amazing miracles in their presence (John 20:30); the same Man Who foretold precisely Peter's triple denial (Matthew 26:34,75); the same Man Who accurately prophesied His own betrayal, scourging, and crucifixion (Matthew 20:18-19): this same Man repeatedly prophesied of His resurrection, even foretelling the very day on which it would occur (John 2:19; Matthew 12:40; 16:21; 17:22-23; 20:18-19; 26:32). So well known were Jesus' prophecies of His resurrection from the dead on the third day that even **His enemies** were aware of them. In fact, the "chief priests and Pharisees gathered together to Pilate, saying, 'Sir, we remember, that while He was still alive, how that deceiver said, "After three days I will rise." Therefore command that the tomb be made secure until the third day, lest his disciples come by night and steal Him away" (Matthew 27:62-64).

So why did Jesus rebuke His apostles for their unbelief following His resurrection? Was He implying that they should have behaved like simpletons and believed everything they ever heard from anyone? ("The simple believes every word, but the prudent considers well his steps"—Proverbs 14:15.) Not at all. Jesus had every right to rebuke His apostles' unbelief, first and foremost, because they refused to believe His Word (cf. Romans 10:17). They had seen Him raise the dead. They had witnessed His perfect life. They had heard His consistent words of Truth, including His repeated and accurate prophecies of various matters, including His betrayal, arrest, scourging, and crucifixion. They had every logical reason to believe what Jesus had prophesied about His resurrection. Everything they had ever seen and heard from Jesus was pure, right, and true.

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Feature Article—Continued

However, rather than **expect** a risen Redeemer on Sunday morning, such an idea "appeared to them as **nonsense**" (Luke 24:11, NASB, emp. added). Rather than traveling to Galilee and searching for the living Lord as soon as the Sun appeared on the third day (Matthew 26:32), they remained in Jerusalem behind closed doors "for fear of the Jews" (John 20:19).

Jesus wanted His disciples to understand about His death and resurrection. He told them: "Let these words **sink down into your ears**, for the Son of Man is about to be betrayed into the hands of men" (Luke 9:43, emp. added). He desired for them to have a sincere, strong, evidence-based faith. Sadly, fear, preconceived ideas about the Messiah and His kingdom, and spiritual blindness (Luke 9:44; cf. 2 Corinthians 4:4) initially interfered with the apostles' belief in His resurrection.

Credible Testimony

When Jesus told Thomas, "Blessed are those who have not seen and yet have believed" (John 20:29), was He condoning a careless faith? Was He advancing the idea of an emotion-driven, feel-good religion? Should we expect Christians living 2,000 years this side of the resurrection of Christ to have a reasonable faith in the risen Savior? If, unlike Thomas and the rest of the apostles, Jesus has never appeared to us, how can we expect to have a fact-based faith?

The same God Who rightly expects His human creation to examine the evidence and come to a knowledge of Him without ever literally seeing Him, is the same God Who expects man to follow the facts that lead to a resurrected Redeemer without ever personally witnessing His resurrection. No one believes in God because they can put Him under a microscope and see Him. No one can prove He exists by touching Him. We cannot use the five senses to see and prove the actual essence of God (cf. John 4:24; Luke 24:39). What we have at our fingertips, however, is a mountain of credible evidence that testifies on God's behalf. The very existence of finite matter testifies to a supernatural, infinite, eternal Creator. The endless examples of design in the Universe bear witness to a grand Designer. The laws of science (e.g., the Law of Biogenesis) testify to God's existence. [NOTE: For additional information on the existence of God, see http://www.apologeticspress.org/APContent. aspx?category=12.

A reasonable faith in Jesus' resurrection is, likewise, based upon a mountain of **credible testimony**. Just as credible testimony (and not first-hand knowledge) has lead billions of

people to believe, justifiably so, that Alexander the Great, Napoleon, and George Washington were real people, millions of Christians have come to the **logical conclusion** that Jesus rose from the dead. Nineteen-hundred-yearold eyewitness accounts of Jesus' resurrection exist in the most historically documented and accurate ancient book in the world—the New Testament. The event was foreshadowed and prophesied in the Old Testament (Psalm 16:10; Jonah 1:17-2:10; Matthew 12:40). Though very serious preventative steps were taken to keep the lifeless body of Jesus buried (Matthew 27:62-66), the tomb was found empty on the exact day He promised to arise. The body of Christ was never found (and, no doubt, first-century skeptics, especially the impenitent Jews who put Him to death, would have loved nothing more than to present Jesus' dead body to early Christians).

The once fearful and skeptical disciples quickly transformed into a courageous, confident group of Christians who suffered and eventually died for their continual belief and teachings regarding the resurrected Lord. Hundreds of early Christians were able to testify to having seen Jesus firsthand after His resurrection (1 Corinthians 15:5-8). Tens of thousands of onceskeptical Jews, not the least of which was Saul of Tarsus, examined the evidence, left Judaism, and confessed Jesus Christ as the Son of God (Acts 2:41,47; 4:4; 5:14; 6:7; 21:20). What's more, these same Jews changed their day of worship from Saturday to Sunday (Acts 20:7; 1 Corinthians 16:1-2). As with evidence for the existence of God or the inspiration of the Bible, the cumulative case for the resurrection of Christ from credible testimony lies at the heart of a fortified faith.

CONCLUSION

Jesus rightly rebuked His apostles following His resurrection. They should have believed Mary Magdalene because she was a credible witness who said nothing more than what the Son of God had previously said many times would happen: He would arise on the third day following His death. What's more, the blessing that Jesus mentioned to the apostle Thomas ("Blessed are those who have not seen and yet have believed"—John 20:29) was not an endorsement of a blind, emotion-based, feel-good religion, but Heaven-sent support for the truthful, credible evidence that leads the open-minded, truth-seeker to confess Him as "Lord and God."

Autonomous Control of Creation

Jeff Miller, Ph.D.

AUTONOMOUS CONTROL AND "MOTHER NATURE"

ngineers regularly work with con-✓ is a step beyond remote control. Remote control applications allow manual issuing of commands through some sort of transmission device (i.e., a remote controller) that controls something else (e.g., a robot or television) located some distance away from the controller. Autonomous control, on the other hand, uses a computer program to issue the commands. The computer becomes the controller, instead of a human being. It is common knowledge in the engineering community that autonomous control is a subject that is of particular interest today. From autonomous control of ground vehicles (Naranjo, et al., 2006), to autonomous missile guidance systems (Lin, et al., 2004) and aerial vehicles (Oosterom and Babuska, 2006), to autonomous aquatic vehicles (Loebis, et al., 2004) and satellites (Cheng, et al., 2009), and even to autonomous farming equipment (Omid, et al., 2010), notable success is being made in this area of technology.

The amazing thing from a Christian perspective, however, is that many engineers—the designers of the scientific community—are becoming aware of the fact that the world around us is already replete with fully functional, superior designs in comparison to what the engineering community has been able to develop to date. Biomimicry (i.e., engineering design using something from nature as the blueprint) is becoming a prevalent engineering pursuit. However, some engineers are not interested in copying creation in their designs since they simply cannot replicate many of the features that the natural world has to offer. They are realizing that the created order oftentimes comes equipped with



Remote Control

natural "sensor suites" whose designs surpass the capability of engineering knowledge to date. Animals possess amazing detection, tracking, and maneuvering capabilities which are far beyond the knowledge of today's engineering minds, and likely will be for many decades, if not forever. An insect neurobiologist, John Hildebrand, from the University of Arizona in Tucson, admitted, "There's a long history of trying to develop microrobots that could be sent out as autonomous devices, but I think many engineers have realised [sic] that they can't improve on Mother Nature" (Marshall, 2008, p. 41). Of course, "Mother Nature" is not capable of designing anything, since "she" is mindless. The Chief Engineer, the God of the Bible, on the other hand, can be counted on to have the best possible engineering designs. Who, after all, could

out-design the Grand Designer? In spite of the deterioration of the world and the entrance of disease and mutations into the created order, after some six millennia, His designs still stand out as the best—unsurpassed by human wisdom.

CONTROLLING THE LIVING

ecognizing the superiority of the Ratural world, the scientific community has become interested in learning how to remotely control living creatures instead of developing robotic versions. This line of thinking certainly adds new meaning to God's command to mankind to "subdue" and "have dominion" over the created order (Genesis 1:28). One of the ways in which animal remote control is being done is by implanting electronics in animal bodies that are subsequently used to manipulate the movements and behaviors of the creature. Hybrid creatures such as these are known as bio-robots or cyborgs. Cyborg research has been conducted since the 1950s, when Jose Delgado of Yale University implanted electrodes into the brains of bulls to stimulate the hypothalamus for control purposes (Marshall, 2008). Since then, the list of remotely controlled animals using electrode implantation has grown to include:

- sharks (i.e., spiny dogfish; Gomes, et al., 2006; Brown, 2006)
- rats (Talwar, et al., 2002; Li and Panwar, 2006; Song, et al., 2006)

SPEAKING SCHEDULES		
Kyle Butt		10.
December 3	Leoma, TN	(931) 852-4181
December 30	Huntsville, AL	(334) 386-7320
Eric Lyons		
December 3-4	Olathe, KS	(913) 829-5596
December 11	Wetumpka, AL	(334) 567-6561
December 30	Huntsville, AL	(334) 386-7320
Dave Miller		
December 4	Montgomery, AL	(334) 264-2985
January 8-9	Bedford, TX	(817) 282-6526
Jeff Miller		
December 1,8,15	Montgomery, AL	(334) 399-7761

- monkeys (Brown, 2006; Horgon, 2005)
- mice ("SDUST Created...," 2007)
- chimpanzees (Horgon, 2005)
- frogs (Song, et al., 2006)
- pigeons ("SDUST Created...," 2007)
- cats (Horgon, 2005)
- gibbons (Horgon, 2005)
- cockroaches (Holzer, et al., 1997; "Researchers Develop 'Robo-roach," 2001)

Cornell University, the University of California at Berkeley, the University of Michigan, and Arizona State University at Tempe are working on developing flying insect cyborgs, including hawkmoths and green June beetles (Ray, 2010; Sato, et al., 2008; Sato, et al., 2009; Bozkurt, et al., 2008). The University of Florida in Gainesville used electrodes to remotely control rats specifically for detection of humans (for search and rescue scenarios) and explosives (Marshall, 2008). Non-invasive remote creature control projects are underway as well. M.I.T. used virtual fencing coupled with Global Positioning System (GPS) for tracking and autonomously herding cows by implementing auditory cues and shock reinforcement to keep cows within a desirable area (Correll, et al., 2008; Schwager, et al., 2008).

There is beginning to be more interest in the prospect of remotely controlling canines as well ("Grand Challenge...," 2010). Engineers realize that dogs can traverse a variety of terrains more efficiently than humans or robots and are effective at guarding territories, carrying out search and rescue missions, as well as providing guidance for the visually impaired. They also have an amazing sense of smell that makes them capable of detecting explosives, narcotics, tobacco, pipeline leaks, retail contraband, and even cell phones and bed bugs ("Detection Services," 2010). Since engineers have not developed a device that can compare with a canine's ability to detect odors, the use of canines for these applications is attractive. Although other creatures, such as rats (Marshall, 2008),



Canine "Major"—One of Auburn
University's autonomously-guided canines,
equipped with the guidance system

have a keen sense of smell, canines are more appealing, especially due to their innate ability to interact with humans. Thus, using canines for these purposes is attractive to engineers, and the ability to remotely control a canine for many of these purposes is an even more attractive goal. Many scenarios could be envisioned to illustrate cases where the presence of a dog handler alongside a canine could be an impossibility (e.g., tight areas in search and rescue operations) or undesirable (e.g., scenarios where the handler should not be visible or in harm's way). In a recent event in Afghanistan, a bomb detection canine detected an explosive a moment too late. The canine handler lost his left leg and received other serious injuries ("Grand Challenge...," 2010). Remote control capability or autonomous guidance likely would have significantly altered the outcome of this unfortunate event, as well as many others.

Since engineers cannot yet develop an adequate robotic solution to this problem, the Office of Naval Research funded a research project to develop such a solution—a research project I was heavily involved in at Auburn University while engaged in doctoral studies. The Canine Detection and Research Institute (CDRI) at Auburn University demonstrated that detection canines can be remotely controlled using a canine vest we developed that was equipped with a tone and vibration generator (Britt, et al., 2010). However, many cases could easily be envisioned where the canine

would be out of sight from the handler (e.g., moving behind a distant building), at which time remote control capability becomes useless. Therefore, the next natural step was to automate that remote control capacity (i.e., autonomous control of the canine).

Since canines can traverse a variety of terrains more efficiently than humans, and possess a natural array of "sensors" used to detect and locate items of interest that robots are not readily equipped with, many aspects that pose problems to unmanned ground vehicles are inherently removed with the canine. Canines can execute the low-level decision making that is necessary for rerouting their local path to avoid obstacles or unfavorable terrain. We proved with notable success that canines can be tracked using GPS, inertial sensors, and magnetometers (Miller and Bevly, 2007; Miller and Bevly, 2009a; Miller and Bevly, 2009b), as well as be autonomously guided along desired paths to distant end points (Miller, 2010; Britt, 2009). More important, this system was designed without having to develop the technology that would be required for a complete robotic solution. Instead, a pre-designed creature, already developed by the Chief Engineer, was utilized. In the interest of not plagiarizing Him, I happily reference His incomprehensible work, although, unfortunately I cannot speak for all of my doctoral colleagues.

CONCLUSION

How ironic that those who are designed, design based on the Designer's designs, while simultaneously claiming that those designs are not designed. How could mindless rocks, dirt, gas, or slime bring about the amazingly complex designs we see in the World? Personifying inanimate materials such as these with names like "Mother Nature" does nothing but tacitly admit that some Being is in control of the natural order. The frontlines of the engineering community today—bringing about unparalleled technol-

ogy, more advanced than any society in the history of mankind—cannot come close to replicating the designs around us. Engineers are forced to borrow from God's design portfolio (oftentimes plagiarizing Him—not giving Him due credit for His designs). What a testament to the greatness of the Chief Engineer's created order! We may be able to try to fix some of the damage that has been done to the created order due to sin and entropy, but in the words of John Hildebrand, quoted earlier, we certainly "can't improve on" God's design. Rather than plagiarizing Him, let all engineers know, "He who built all things is God" (Hebrews 3:4, emp. added).

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NOTE FROM The Edition

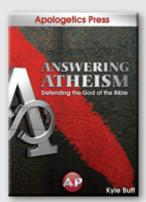


Answering Atheism DVD

Apologetics Press is pleased to release our latest product to assist in fighting the worldwide war against the God of the Bible. Even in America, atheists are waging a full-scale assault on the fundamental values that have always characterized American society. More than ever before, high-profile atheists, skeptics, and agnostics are voicing their objections to belief in God, and they are getting a wide hearing—from the university classroom to the liberal news media to the

cinematic productions of television. They claim that the God of the Bible hates homosexuals and women, and that He condones slavery. They insist that God cannot exist since evil, pain, and suffering are rampant in the world. They maintain that atheism offers a superior moral framework for humanity.

Answering Atheism is a DVD that contains six lessons (each less than 40 minutes) delivered by Kyle Butt that refute these baseless claims of atheism, laying bare its misleading baggage and inaccurate characterizations. These lessons are designed to help adults and young people to see clearly that God and His Word provide the only sensible, rational, legitimate approach to human existence and living life. Only the Bible provides the



correct moral framework out of which to make daily decisions. The lesson titles are: "Moral Implications of Atheism," "Death of the Innocent," "The Bible and Slavery," "The Biblical View of Women," "Evil, Pain, and Suffering," and "A Loving God and an Eternal Hell."

A.P. DVDs are excellent for classes as well as home viewing, and this new DVD is no exception. We must take seriously the culture war that is raging in our country

and do all we can to insulate ourselves, our children and grandchildren, our friends, and all others who will listen. You should view this DVD. "For the weapons of our warfare are not carnal but mighty in God for pulling down strongholds, casting down arguments and every high thing that exalts itself against the knowledge of God (2 Corinthians 10:4-5). Indeed, may God help us to "[f]ight the good fight of faith, lay hold on eternal life" (1 Timothy 6:12).

Dave Miller

See the Center Spread for More Details